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[54] **NUMERICALLY INTENSIVE COMPUTER ACCELERATOR**

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[52] **U.S. Cl.** **364/736.03**

[58] **Field of Search** 364/736, 736.03

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[57] **ABSTRACT**

A matrix processing unit is described which permits high speed numerical computation. The processing unit is a vector processing unit which is formed from a plurality of processing elements. The Ith processing unit has a set of N registers within which the Ith elements or words of N vectors of data are stored. Each processing element has an arithmetic unit which is capable of performing arithmetic operations on the N elements in the set of N registers. Each vector of data has K elements. Therefore, there are K processing elements. A vector operation of the matrix processing unit simultaneously performs the same operation on all elements of two vectors or more. A subsequent vector operation can be performed within one machine cycle time after the preceding vector operation.

16 Claims, 5 Drawing Sheets